ENVIRONMENTAL REVIEW MEETING Grenada, Mississippi



Main Plant Site 16th Section Property Moose Lodge Road Disposal Area

> David O'Connor March 27, 2014

Meeting Outline



- 1. Background
- 2. Remediation Detail
- 3. Key next steps / decisions and timing
- 4. Appendix
 - a. Site Pictures/Diagrams/Aerial Pictures

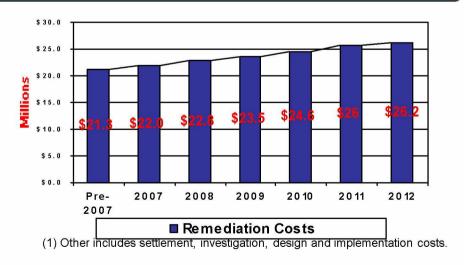
Background – Main Plant, 16th Section and Moose Lodge



General

- Legacy Company: Rockwell Automotive
- Year-Site Closed: Sold to Textron in 1985
- Type of Contamination: Groundwater/Soil (Trichloroethene [TCE] and daughter products; Chromium at *Main Plant Site* only)
- Remediation Plan Approved: Yes
- Remediation Status: In Process
- External Consultant: T&M Associates (Main Plant Site and 16th Section Property); and Stantec Consulting (Moose Lodge Area)

Est. Cumulative Cash Spend to Date



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Correspondence

- Most Recent Correspondence including which Agency: MW-20 Area Data Transmittal and Vapor Intrusion RA (U.S. EPA); Annual Groundwater Reports for 16th Section and Moose Lodge (MDEQ)
- Frequency and Volume of Correspondence: Periodic/Quarterly
- Open Issues: Source of plume beneath neighborhood, Soil gas source, VI potential for neighborhood, PRB treatment efficiency (Main Plant Site); ISCO performance, risk assessment and deed restrictions (Moose Lodge Area)

Liability Summary (\$1000s)

<u>Description</u>	Estimated Probable Liability	Reasonably Possible Liability
Estimated Liability		
O&M 2013-2035 (Main Plant Site)	\$1,134	\$3,027
O&M 2013-2037 (16th Section)	\$638	\$1,025
O&M 2013-2037 (Moose Lodge)	\$537	\$1,066
ISCO Treatment (Moose Lodge)	\$236	\$276
<u>Total</u>	<u>\$2,545</u>	\$5,394



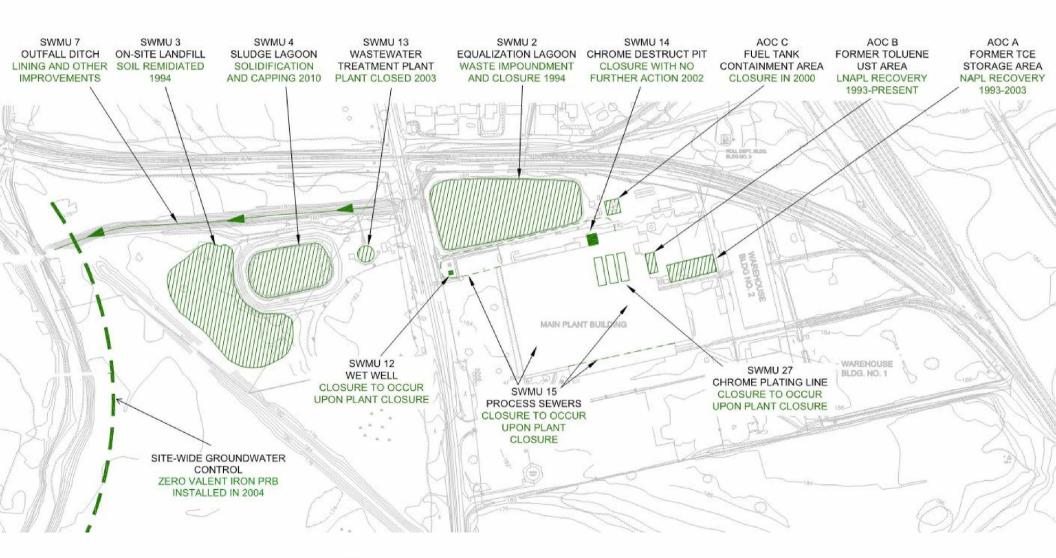
Site History

- Operations begin in 1961 as Lyon, Inc. (wheel cover manufacturing)
- Rockwell International (Automotive Division) 1966 1985
- Textron Automotive Company 1985 1999
- Grenada Manufacturing, LLC 1999 2005
- ICE Industries, Inc. (Grenada Stamping and Assembly) 2005
- Current stamping operations for automotive and appliance industries





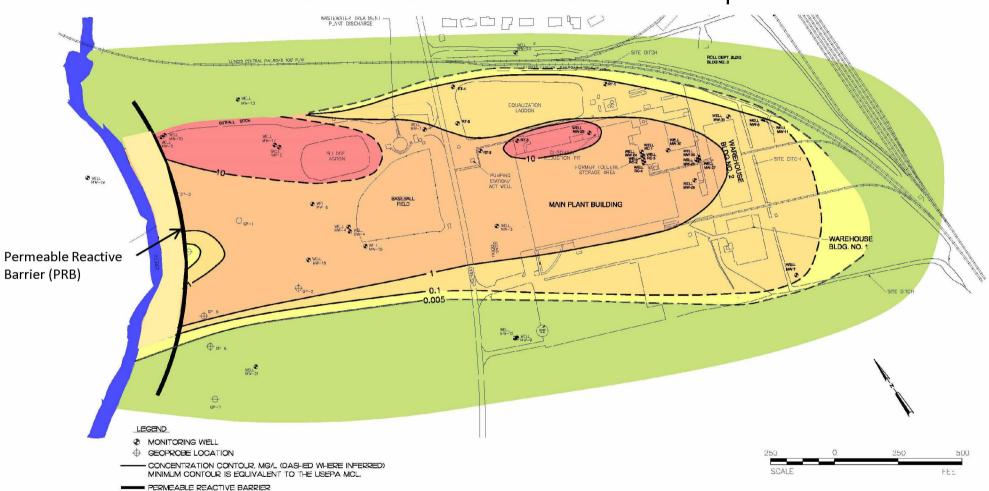
Summary of Remedial Actions



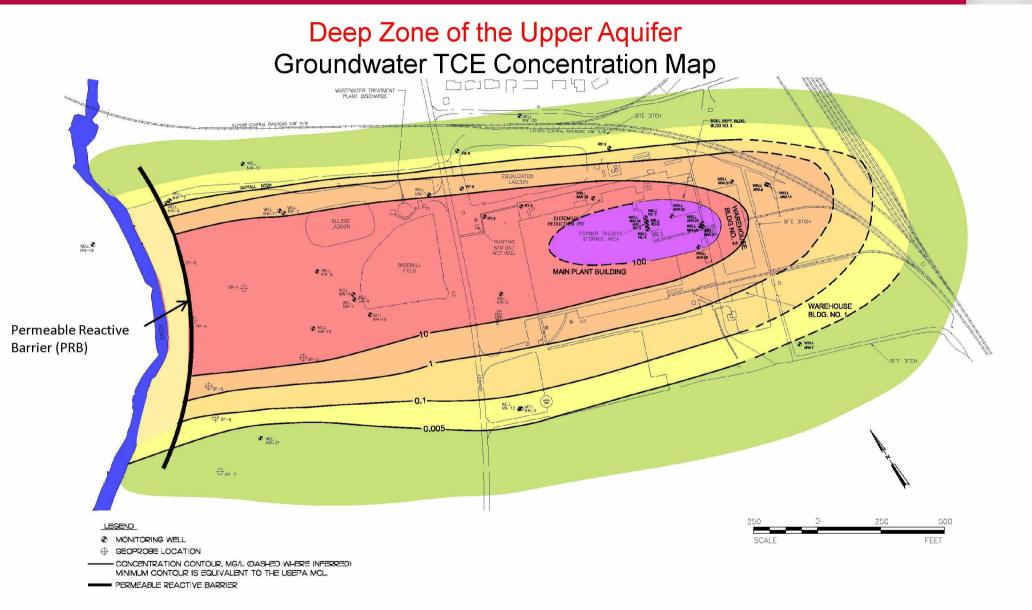


Shallow Zone of Upper Aquifer

Groundwater TCE Concentration Map





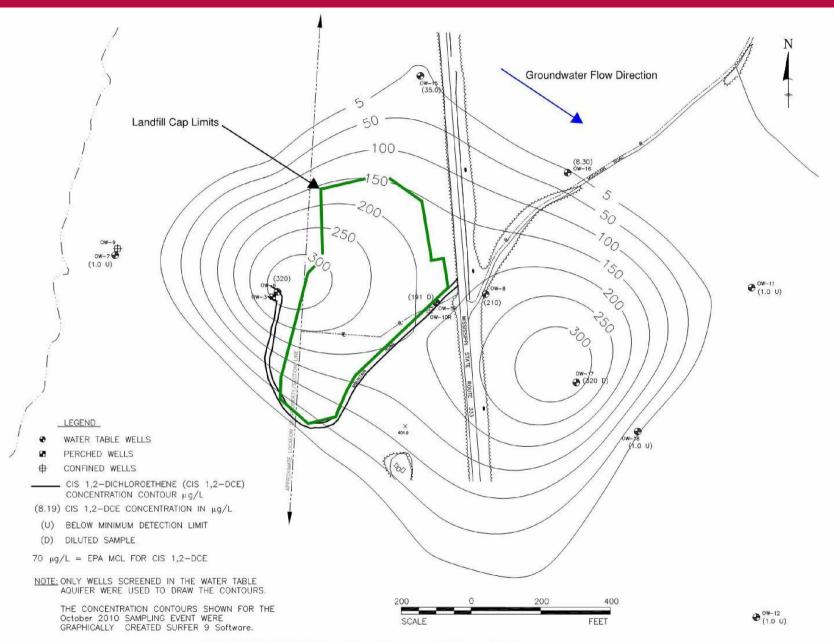




- The contaminant concentrations in the groundwater plume have declined significantly due to source control/treatment measures
- VOC impact to the creek declined significantly after PRB installation, and concentrations (VOCs and metals) in surface water remain consistently low
- PRB remains effective at reducing VOCs in groundwater (i.e., lower measured concentrations downgradient of PRB)
- PRB showing signs of clogging Meritor in discussions with Environmetals Technology, Inc. (ETI) regarding the PRB warranty
- Groundwater plume configuration is changing somewhat from previously defined configurations due to clogging of the PRB. U.S. EPA is seeking more definition of plume near PRB and along northern boundary
- Long-term strategy for rejuvenation and flow maintenance for the PRB is essential and is the focus of current work. An interim solution may be needed to prevent further spread of the plume and further bypass of the PRB

Remediation Detail – 16th Section Property





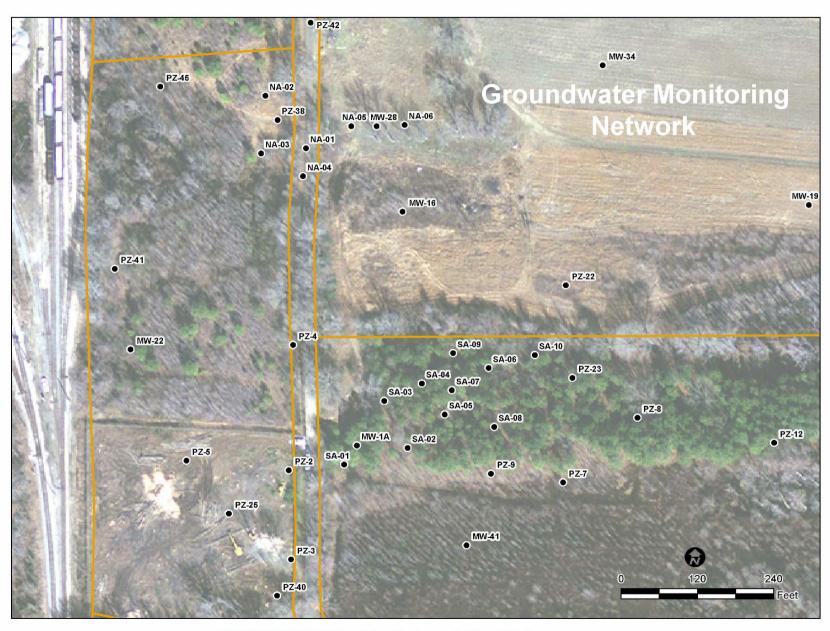
Remediation Detail – 16th Section Property



- Referred to as the "Grenada Lake Site" or the "16th Section Property" where Rockwell allegedly disposed of waste from the Grenada manufacturing plant.
- Regulatory oversight is through the Mississippi Department of Environmental Quality (MDEQ).
- Excavation of the waste materials for consolidation onsite under the landfill cap commenced in August 2004.
- The Construction Completion Report for the 16th Section Landfill Closure was submitted to MDEQ on December 6, 2005.
- Semi-annual groundwater monitoring has continued since closure of the landfill. The 25-year estimated present worth for required O&M, which includes groundwater monitoring and landfill cap maintenance, is \$638,000 (at 1.75% discount).
- Groundwater is monitored for volatile organic compounds (VOCs), with TCE and its daughter product cis-DCE the primary constituents of concern.
- The purpose of the annual sampling event is to evaluate the Site groundwater quality and the potential for natural attenuation to control plume migration.
- MDEQ questions the efficacy of natural attenuation, but so far has been satisfied with the monitoring results and that the plume is not expanding or migrating.

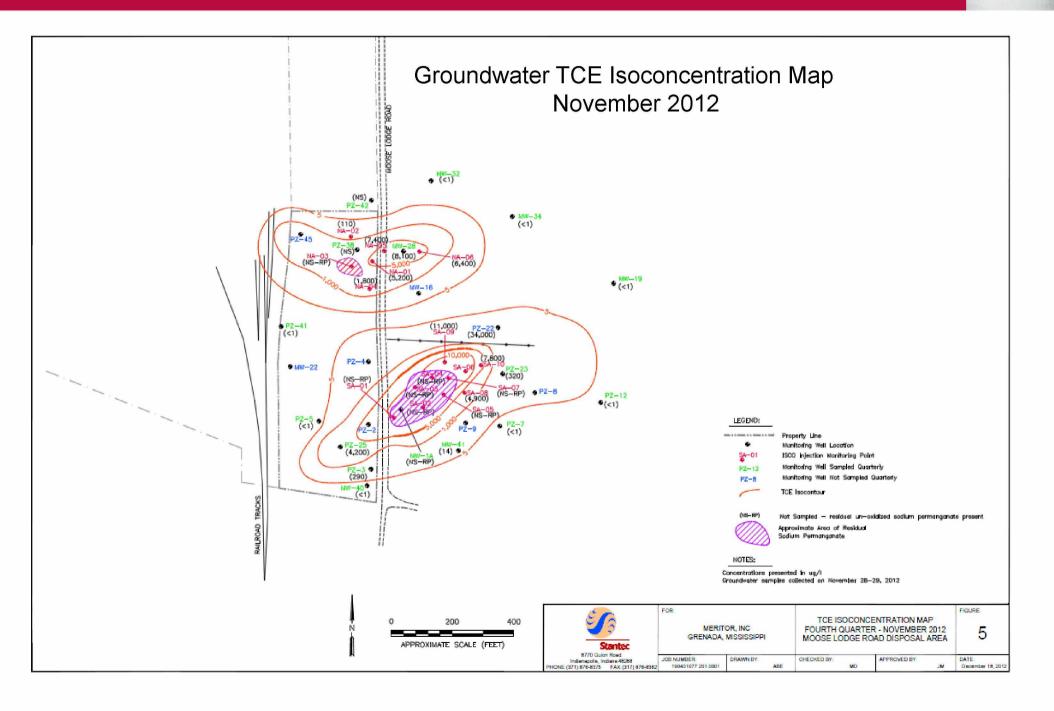
Remediation Detail – Moose Lodge RD Area





Remediation Detail – Moose Lodge Area





Remediation Detail – Moose Lodge Area



- Conducted Soil remediation 2007 2008 (i.e., buffing compound excavated and disposed at offsite landfill).
- Commenced In-situ Chemical Oxidation (ISCO) remediation in late 2009 with 3% potassium permanganate; completed treatment in early 2010.
- Groundwater monitoring results from 2011 and 2012 indicated oxidant was being consumed and chlorinated VOC concentrations were rebounding in some areas.
- Implemented second round of ISCO remediation in 2012 using stronger, more soluble oxidant sodium permanganate at 5 7 % concentrations.
- Continue remediation performance monitoring and reporting.
- Evaluate necessity of additional targeted ISCO treatments in areas where oxidant is readily consumed.
- Conduct risk assessment and evaluate need to continue active site remediation.

Next Steps / Decisions and Timing (All Three Sites)



- Submit 2012 Annual Report with Supplemental Report to address USEPA concerns March 2014 (Main Plant Site).
- Implementation of interim action to prevent groundwater plume spread at PRB Summer 2014 (Main Plant Site).
- Complete final phase of soil gas investigation north of site May 2014 (Main Plant Site).
- Continue warranty discussions with ETI and come to a resolution regarding PRB rejuvenation (Main Plant Site).
- Continue streamlining groundwater monitoring to reduce long-term costs and improve quality of groundwater data (*Main Plant Site*).
- Determine if an off-site source is present and affecting groundwater under neighborhood

 Summer 2014

 (Main Plant Site).
- Continue PRB effectiveness/rejuvenation study Ongoing (*Main Plant Site*).
- Continue monitoring and maintenance activities Ongoing (16th Section Property).
- Continue quarterly groundwater monitoring and reporting to evaluate ISCO performance 2013/2014 (Moose Lodge Area).
- Evaluate necessity to continue active groundwater remediation 2013 (*Moose Lodge Area*).
- Conduct risk assessment 2013/2014 (*Moose Lodge Area*).
- Pursue deed restrictions, if necessary, to support risk assessment 2014 (*Moose Lodge Area*).

Appendix – Main Plant & Moose Lodge Aerial





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Appendix – Granular Zero Valent Iron for the PRB





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Appendix – Installing the PRB





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Appendix – Former Sludge Lagoon





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Appendix – Solidification of Sludge





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Appendix – Sludge Lagoon Soil Cap





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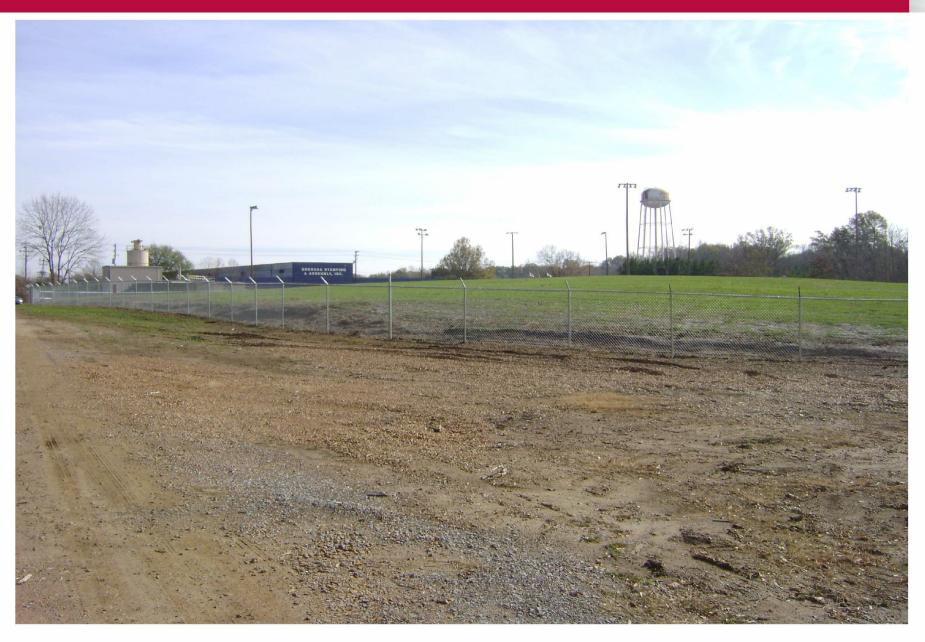
Appendix – Sludge Lagoon Liner Installation





Appendix – Sludge Lagoon Closure Complete

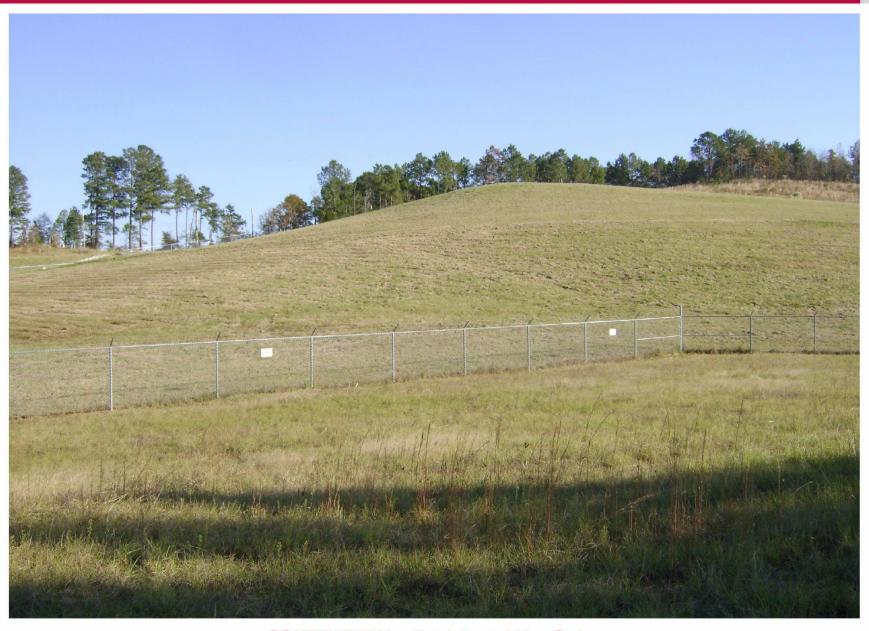




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Appendix – 16th Section Landfill





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Appendix – Moose Lodge Road Disposal Area





2012 ISCO Remediation Photographs (Clockwise from left): NaMnO₄ tote on forklift; Geoprobe delivering oxidant to subsurface; water tank and oxidant mix tank on flatbed trucks.



